

A Local Public Health Laboratory Response to the 2009 Influenza A H1N1 Pandemic: Mapping of Preparedness to Core Laboratory Functions and Essential Services

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ABSTRACT

Background: The emergence of 2009 Influenza A H1N1 posed significant challenges to public health laboratories including the City of Milwaukee Public Health Laboratory. The dramatic surge in workload in our laboratory from 854 influenza specimens in 2008 to 5,707 in 2009 (568% increase) with >25% positivity rate resulted in significantly modified operations during a major public health crisis.

Mapping of PH Laboratory Core Functions with Essential Services: The laboratory preparedness capabilities for the 2009 Influenza A H1N1 pandemic were examined in the framework of their relationship to core functions when mapped to the 10 Essential Services of Public Health. Laboratory activities included working with in-house investigators and external partners: local hospitals, research and public health laboratories including CDC and WHO.

The key priority areas for the laboratory included timely diagnosis, detection and characterization of influenza strains, result reporting, data sharing and messaging partners, public policy, workforce integrity, revenue generation and continuity of operations. Laboratory activities supported decision making processes within the Incident Command Structure and influenced activities such as mass vaccination clinics and school closings.

Conclusions: The laboratory maintained overall services and operational integrity during the pandemic and supported the Essential Services required for the community at large. Laboratory response to a major public health emergency can be framed and described for policy makers to show its contribution to the larger public health picture.

INTRODUCTION

The 11 Core Functions of Public Health Laboratories (CF)¹ describe the expected capabilities that the Public Health Laboratory System^{4,5} provide or assure in safeguarding the public's health. These 11 measurable Core Functions assure that the 10 Essential Services of Public Health (ES)² are adequately supported by laboratory-based scientific data.

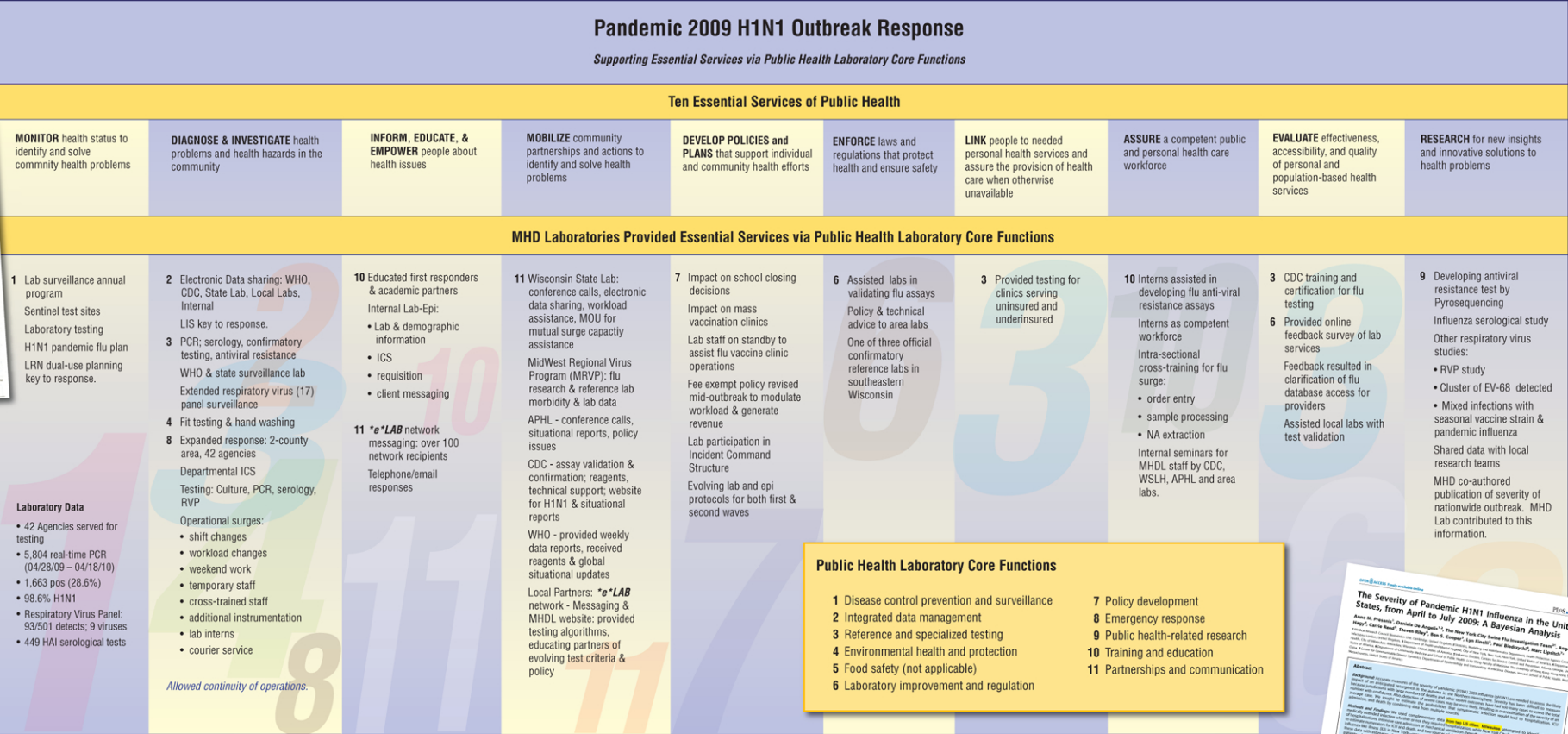
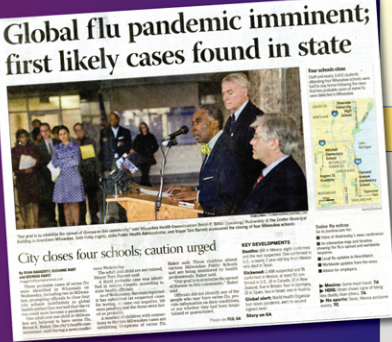
A cross-walk of Core Functions to Essential Services has been described⁶ and illustrates how these measurable standards are linked and mutually support each other.

The goal of this poster is to show how measurable activities of the public health laboratory fulfill the Core Functions and support the Essential Services during a significant public health event, the 2009 Influenza A H1N1 outbreak.



Emergency Response & Policy Development

- ICS deployed during 1st and 2nd waves of pandemic (operational)
- 15 large public vaccination clinics (Oct-Dec 2009)
- Over 26,000 vaccinations delivered by MHD



Role of the Laboratory Response Network

Over ten years of preparedness planning, and with support as a member of the Laboratory Response Network (LRN), MHDL was enabled to respond to many outbreaks and surges. This support and planning assured a rapid response and continuity of operations for the Essential Services and Core Functions necessary to meet the public health demands of the pandemic 2009 H1N1 outbreak in Milwaukee.

CONCLUSION

Many state as well as some local public health laboratories have striven to develop laboratory networks whose goal is to respond to public health needs and threats consisting of those who initiate testing and those who ultimately use the test results. APHL defined these as State Public Health Laboratory Systems (SPHLS)^{4,5}. Milwaukee's local PHLS is such a network within which Core Functions¹ and Essential Services² of PHLS takes place.

The Essential Services provide a framework to describe and examine the breadth of public health practice, performance, and infrastructure capability needed within both the state and local public health systems.

The laboratory response to pandemic 2009 Influenza A H1N1 in Milwaukee provides an illustration of Core Functions of Public Health Laboratories supporting these Essential Services within the network of a regional Public Health Laboratory System.

Why is it important to link Core Function activities to the Essential Services?⁶

These links provide insight and illustrate, document and justify the laboratory's role against standards for addressing key issues, including:

- 1) community assessment of public health and public health laboratory systems,
- 2) grant justification,
- 3) accreditation of health agencies and laboratories ,
- 4) political and organizational accountability, which rely on measuring the effectiveness of public health activities against national standards such as the Essential Services.

Therefore, linking activities of Core Functions to Essential Services shows that public health laboratories play a critical role in meeting the desired outcomes and goals of the Essential Services.

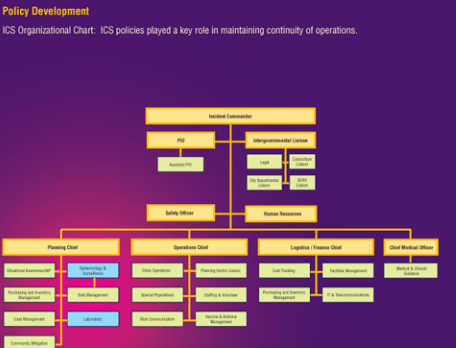
This poster illustrates how in a severe test of the public health system (2009 H1N1), the Public Health Laboratory System in Milwaukee contributed significantly toward achieving those goals.

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Training and Education

MHDL interns assisted research and accomplished workforce development goals.

